



U.S. Army Corps
of Engineers
Alaska District

ALASKA BASELINE EROSION ASSESSMENT

Erosion Information Paper - Emmonak, Alaska

Current as of August 5, 2007

Community Information

Emmonak (ee-MAHN-nuck), population 796, is on the Yukon River Delta near the mouth of the Yukon River, 10 miles from the Bering Sea, about 120 miles northwest of Bethel, and 490 miles from Anchorage. The community is on the north bank of Kwiguk Pass (aka, Kwikluak Pass), a channel of the Yukon River located approximately 1.5 miles upstream from the main channel, and within the Yukon Delta National Wildlife Refuge. Emmonak is incorporated as a 2nd class city in the unorganized borough.

Description of Erosion Problem

Based on the community survey, Emmonak experiences erosion associated with the Kwiguk Pass channel and the Yukon River channel and delta. Conditions causing and contributing to the erosion include seasonal fluctuations in river flows and water elevations, flooding, ice jams, spring break up, boat traffic, pedestrian and vehicle traffic along the beaches and banks, above-normal high tides, storm surges, wind-driven wave action from the Bering Sea, and thawing of ice-rich soil. Spring floods caused major erosion in May 1972, June 1985, May 1989, 1992, 2005, and August 2005. A June 1984 flood caused minor erosion to a road. The Kwiguk Pass channel riverbank is eroding by the community in areas not protected by armor rock. During each flood event an estimated 15-20 feet of unprotected banks erode. A 1994 Corps *Trip Report* estimated that historic erosion rates along the city's waterfront ranged from 2 to 25 feet per year. According to the community survey, erosion is affecting about 3,000 linear feet of river shoreline along the airport access road, upstream of the community barge landing, and next to the community landfill. Erosion is closest to the road at the landfill, with a vertical cut bank of about 10 to 15 feet high. The bank, with exception of the area near the landfill, has mature willow growth about 10 feet tall.

Potential Damages

Airport Way is the main road to the airport. The road was washed out during a flood-erosion event in 2005, making the riverside road the only access to the airport. Airport Way remains threatened by active erosion. Utility lines that service the airport are along the threatened road. The Alaska Department of Transportation and Public Facilities (DOT&PF) plans to reconstruct the road in 2008 or 2009, at an estimated cost of \$1.4 million.

Most of the community is protected from erosion by a revetment of armor stone constructed with state legislative grant funds. A 1981 DOT&PF report recommended that a 3,200 linear foot armoring project be constructed. The exact length of the project constructed with state grant funds is unknown.

The Corps constructed a Section 14 1946 Flood Control Act rip rap project in 1998 at a cost of about \$1.1 million. This provided erosion protection along a 1,443 foot portion in front of the Yukon Delta fish co-op processing plant, Alaska Commercial company store, and other erosion-threatened structures. According to a 2007 Corps *Trip Report* the overall integrity of this revetment appears to be fair. The armor is in poor condition and there are no signs of active erosion except at the downstream end.

The city manager stated during a July 18, 2006 Corps site visit that the island across from Emmonak in the channel of the Yukon River is eroding. If the island goes (which the city manager feels would be in 2 years), Emmonak's shoreline would likely erode at an accelerated rate. The community reported that the landfill is at risk. There appears to be potential for the river to flank the existing barge landing, although the end of the Corps riprap is keyed into the bank. Based on a 2007 Corps Trip Report, additional structures that appear threatened are 2 portable storage units near the downstream end of the main community armor rock revetment. The city participates in the National Flood Insurance Program and flood insurance is available for flood or flood-related erosion losses for insured structures.

Photos and Diagrams

Attached are photos of erosion provided by the community, taken by the Division of Homeland Security and Emergency Management. A diagram showing the approximate linear extent of erosion is also attached.

References

- ASCG, Bechtol. 2007. *City of Emmonak Local Hazards Mitigation Plan, Final Draft – March 1, 2007*.
- R&M Consultants. 1981. *Emmonak Erosion Control Project, Phase I Report*. Prepared for DOT/PF.
- USACE. 1994. *Emergency Bank Protection Detailed Project Report and Environmental Assessment, Emmonak, Alaska*.
- USACE. 2004 . *Emmonak Annual Inspection of Completed Projects Report*. Alaska District, U.S. Army Corps of Engineers.
- USACE. 2007. *Corp of Engineers Trip Report*. Alaska District, U.S. Army Corps of Engineers.
- USACE. 2007. *Alaska Community Erosion Survey*, OMB approved number 07100001, expires September 30, 2009 completed by John F. Moses, Emmonak city land planner and Clyde Aketachunak, Emmonak tribal transportation planner on August 5, 2007 and provided by facsimile to the Corps of Engineers.

Additional Information

This information paper, as well as those for other communities, can be accessed on the internet at www.alaskaerosion.com. For more information please contact the Corps of Engineers, project manager at (907) 753-5694 or email Alaska.Erosion.POA@usace.army.mil



Photo 1: Airport Way Washout and Exposed Culvert, May 2005.



Photo 2: Airport Way Erosion / Washout, May 2005.



NOTE: The extent of erosion shown on this figure is based on interviews with the community. This data has not been field verified. This figure is only intended to show areas of erosion, not rates or severity of erosion



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--- Linear Extent of Erosion



Alaska Baseline Erosion
Emmonak, Alaska